ABSTRACT OF THE DISCLOSURE

A robot system having an image processing function capable of detecting position and/or posture of individual workpieces randomly arranged in a stack to determine posture, or posture and position of a robot operation suitable for the detected position and/or posture of the workpiece. Reference models are created from two-dimensional images of a reference workpeace captured in a plurality of directions by a first visual sensor and stored. Also, the relative positions/postures of the first visual sensor with respect to the workpiece at the respective image capturing, and relative position/posture of a second visual sensor to be situated with respect to the workpiece are stored. Matching processing between an image of a stack of workpieces captured by the camera and the reference models are performed and an image of a workpiece matched with one reference model is selected. A three-dimensional position/posture of the workpiece is determined from the image of the selected workpiece, the selected reference model and position/posture information associated with the reference model. The position/posture of the second visual sensor to be situated for measurement is determined based on the determined position/posture of the workpiece and the stored relative position/posture of the second visual sensor, and precise position/posture of the workpiece is measured by the second visual sensor at the determined position/posture of the second visual sensor. A picking operation for picking out a respective workpiece from a randomly arranged stack can be performed by a robot based on the measuring results of the second visual sensor.